China's Investment Opportunity in Modernizing Grids in Climate Vulnerable Developing Countries *

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The International Renewable Energy Agency (IRENA), and the State Grid Corporation of China (SGCC), recently signed a Memorandum of Understanding (MoU) to work closely to support grid enhancements, system flexibility and sector-coupling in China and IRENA's Clean Energy Corridor regions. The agreement aims to advance the global energy transformation towards a net zero energy future particularly in developing countries, in the context of achieving the Paris Agreement objectives and the UN Sustainable Development Goals.

The State Grid of China (SGCC) is one of the largest grid-focused utilities in the world, with revenue of over CNY 2.7 trillion (~USD 390 billion) in 2019, with operations that span beyond the borders of China to Brazil, the Philippines, Portugal, Australia, Italy, Greece, Hong Kong, Oman and Chile. In the Philippines, SGCC partially owns the National Grid Corporation of the Philippines (NGCP). Interestingly, among all these countries where SGCC invests or operates, the Philippines has the lowest share of renewable energy, not including city-state Hong Kong and oil exporter Oman.

Considering China's role in helping spur the arc of new technology development and the consistent deflationary price trajectory of renewable electricity generation and storage options, it is strategic for China to consider playing a more engaged role in promoting sustainable energy diplomacy. Doing so will encourage developing countries to leapfrog towards modernization as they design modern power systems able to take advantage of improved pricing, reliability, and reduced exposure to technologies of the past persistently hobbled by inflationary pressures and international volatility.

There is much for China to share, and among the most critical is its experience in transmission planning. Grid management is a vital control lever that governments can use to enhance energy security and reliability because of the way it can influence the grid's capacity to prioritize domestic renewable energy resources. Modernizing the grid leads to improved cost-competitive and socio-economic outcomes. More importantly, doing so enhances the ancillary service market which makes the power system more resilient and enables cost competitive power to enter the grid. The rapid development of an ancillary market is strategic because it encourages new market participants such as wind turbines, solar, and storage to provide inertial response, voltage support and frequency control among other services.

In short, the ability of the grid to absorb cost-effective technology can displace high emitting, volatile, expensive and economically harmful fossil fuels even as it reduces financial risks currently being absorbed by climate vulnerable developing country governments.

Coal generation rates are much higher and volatile than what is assumed and a reflection of this is in the Philippines, where high prices in March and April 2021 were caused by over 1.5GW of unplanned outages. This development has triggered the Department of Energy to engage the Department of Justice (DOJ), the Philippine Competition Commission (PCC) and the Energy Regulatory Commission (ERC) to determine whether fossil fuel power generators were intentionally conjuring supply shortages in the market for higher prices.

As Southeast and South Asia are growing markets with growth rates above 5% per year, the need for cost-competitive power to support industrial strategies, new investments to support job growth, and resilient power systems in the face of increasing disasters, are together tipping the logic towards renewable energy.

The opportunity for China's SGCC to partner with other countries as they did with the Philippines goes well beyond transmission and generation capacity. As they have planned in the Philippines, the smarter grids they are able to build, including better demand response and user-to-user trading, allows SGCC to promote a competitive landscape where distribution utilities are no longer natural monopolies. At the same time, grid modernization ensures focus on developing transmission systems that enable retail markets for renewable energy and storage manufacturers, operators and investors. It is clear Beijing needs to take active interest in ensuring SGCC promotes the long view and that it hews close to China's sustainable business agenda. Otherwise, as the developing controversy involving the NGCP demonstrates, the pursuit of short-term gains, whether legitimate or illicit, can harm long-term prospects and the reputation of China.

The US, Korea, Japan and Australia appear determined to offload their unused fossil gas or underutilized fossil gas carriers and equipment at a time of an energy transition, by transferring the risks of these assets to developing countries in South Asia and Southeast Asia using export credit agencies, development assistance agencies and multilateral developing banks. South Asian and Southeast Asian governments and households are not only ill-equipped to manage such volatility. They will also end up bearing the burden of price instability and health costs. Asian fossil gas spot prices have very recently spiked, rising between 4-fold to 18-fold on prices of just six months ago. There is an expectation of more volatile and higher fossil gas prices as a result of lower levels of drilling, financial instability in the oil and gas industry, and low levels of industry investment. Fossil fuels thus continue to be sources of financial liability. Worse, they are likely to create new sources of financial vulnerability.

Considering the need for fiscal space for COVID recovery efforts and the fact that domestic firms for major economies have long profited over transferring all risk to developing countries, regardless of what technology developing countries end up choosing, there must be adequate risk sharing in downside scenarios and upside opportunities. The goal must be to ensure that the market structures used to support new investment need to encourage players capable of taking market risk (e.g., fossil gas suppliers) while domestic companies serving customers must have access to strategies for hedging risks to deliver cost-competitive fixed prices to protect developing country

governments and consumers who themselves lack the ability to manage destabilizing price and market risk.

Financial risks, public health, and climate crisis, are all obvious reasons for climate vulnerable countries and major economies to rapidly move from fossil fuel reliance to renewable energy with support from smarter grids. Members of the Climate Vulnerable Forum (CVF) and Vulnerable Group of Twenty (V20) Ministers of Finance are developing their Climate Prosperity Plans to build forward stronger by charting a decade of robust socio-economic development that fully integrates climate resilience and low carbon economic growth for optimized prosperity. This provides a key investment and partnership opportunity for China, the world's bigger player of renewable energy and grid modernization.

Chinese companies make up over one-third of the world's wind manufacturing, over 70 per cent of the world's solar PV manufacturing and almost 75 per cent of the world's lithium-ion battery manufacturing. Considering that there are more cost-competitive and diverse system options for flexibility and balancing variable renewables than locking-in fossil gas, this decade represents a historical opportunity for China to become a genuinely South-South partner of choice for climate vulnerable developing countries as transmission modernization becomes a critical investment to realize an economic transformation that achieves climate and economic resilience and job opportunities for both China and developing countries. China's decisions to seize opportunities over the next two to three years is also vital as the European Union and the United States unveil new industry strategies to create competitive manufacturing and deployment of modernized technologies in renewable energy and batteries.

China's incorporation of technology modernization has already led the NGCP to issue a recent Transmission Development Plan that includes the consideration of Competitive Renewable Energy Zones (CREZ) for early transmission planning, the inclusion of battery energy storage systems, the adoption of smart grid technologies including a smart grid pilot project, and the upgrading of Energy Management System (EMS) towards improved variable renewable energy simulation and forecasting. The co-financing of this modernization is anticipated to come from an initial public offering (IPO) of USD 1.5 billion with support from domestic Philippine banks.

Building on the newly announced partnership between the International Renewable Energy Agency (IRENA) and SGCC to support grid enhancements and system flexibility, there is an opportunity to include and scale future-proofed infrastructure in developing countries by including the CVF and V20, starting with the SGCC's modernization prospects in the Philippines. NGCP is an ideal opportunity for all key parties – SGCC in China, NGCP in the Philippines, and IRENA – on grid enhancement under the new MoU.

Great changes are underway around the world, much of it spurred by countries seeking new development pathways as current realities impose new constraints and create exciting opportunities for cooperation. In many ways, it is a struggle between the obsolete and the new. Where in this great debate stands the so-called global leaders is the big

question. Will they stand as bulwarks determined to maintain the dominance of a dirty, rickety past many are in a hurry to leave behind? Or will they link arms with the clean, resilient future more and more developing countries are determined to pursue?

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